

## CLAIMS

1. A sandwich structure (2) comprising a core (20) and two facings (21, 22)  
5 between which the core is placed, the core (20) being formed from a mineral-fiber-based product (1) obtained by a process involving internal centrifugation combined with attenuation by a high-temperature gas stream, characterized in that the mineral fibers are crimped.

2. The sandwich structure as claimed in claim 1 or 2, characterized in that  
10 the fiber distribution over a section substantially parallel to the surface of the facings (21, 22) has a substantially V-shaped profile.

3. The sandwich structure as claimed in one of claims 1 to 3, characterized in that the core comprises a plurality of juxtaposed lamellae (25) that extend along the main extension of the facings, the lamellae being formed from the product (1)  
15 based on crimped mineral fibers.

4. The structure as claimed in claim 4, characterized in that the V-shaped profile of the fiber distribution extends over the entire width of the lamellae and the tips of the Vs are substantially aligned.

5. The sandwich structure as claimed in any one of the preceding claims, characterized in that its density is at most equal to  $80 \text{ kg/m}^3$ , preferably between  
20 50 and  $70 \text{ kg/m}^3$ .

6. The sandwich structure as claimed in any one of the preceding claims, characterized in that it has a compressive strength of at least 60 kPa.

7. The sandwich structure as claimed in any one of the preceding claims, characterized in that it has a shear strength of at least 60 kPa.  
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8. The sandwich structure as claimed in any one of the preceding claims, characterized in that the mineral fibers are obtained from the following glass composition in proportions by weight :

SiO <sub>2</sub>	57 to 70%
Al <sub>2</sub> O <sub>3</sub>	0 to 5%
CaO	5 to 10%
MgO	0 to 5%
Na <sub>2</sub> O + K <sub>2</sub> O	13 to 18%

B <sub>2</sub> O <sub>3</sub>	2 to 12%
F	0 to 1.5%
P <sub>2</sub> O <sub>5</sub>	0 to 4%
Impurities	< 2%

and contain more than 0.1% by weight of phosphorus pentoxide when the weight percentage of alumina is equal to or greater than 1%.

9. The sandwich structure as claimed in any one of claims 1 to 7,  
5 characterized in that the mineral fibers are obtained from the following glass composition in mol% :

SiO <sub>2</sub>	55-70
B <sub>2</sub> O <sub>3</sub>	0-5
Al <sub>2</sub> O <sub>3</sub>	0-3
TiO <sub>2</sub>	0-6
Iron oxides	0-2
MgO	0-5
CaO	8-24
Na <sub>2</sub> O	10-20
K <sub>2</sub> O	0-5
Fluoride	0-2

10. The sandwich structure as claimed in any one of claims 1 to 7,  
10 characterized in that the mineral fibers are obtained from the following glass composition in percentages by weight, the alumina content preferably being greater than or equal to 16% by weight :

SiO <sub>2</sub>	35-60 %
Al <sub>2</sub> O <sub>3</sub>	12-27 %
CaO	0-35 %
MgO	0-30 %
Na <sub>2</sub> O	0-17 %
K <sub>2</sub> O	0-17 %

$R_2O$ ( $Na_2O$ + $K_2O$ )	10-17 %
$P_2O_5$	0-5 %
$Fe_2O_3$	0-20 %
$B_2O_3$	0-8 %
$TiO_2$	0-3%

11. The sandwich structure as claimed in any one of the preceding claims, characterized in that the facings (21, 22) are made of sheet metal, possibly perforated.

5 12. The sandwich structure as claimed in any one of the preceding claims, used as a thermal and/or acoustic insulation panel, of the roof, partition or wall-cladding panel type.

13. A process for manufacturing a structure as claimed in any one of the preceding claims, characterized in that it consists in:

- 10 - delivering, on a plane (P), the product (1) based on mineral fibers obtained by an internal centrifugation process;
- crimping the product (1);
  - cutting the crimped product into lamellae (25), preferably along the greatest extent of the crimped product;
- 15 - turning the lamellae (25) through 90° with respect to the plane (P);
- and
- juxtaposing the lamella and assembling them between the two facings (21, 22).

14. The process as claimed in claim 13, characterized in that the fibers of  
20 the product (1) are crimped by means of a crimping unit (31) comprising at least a first pair (310, 311) and a second pair (312, 313) of conveyors between which the product runs in order to be compressed both longitudinally and in its thickness, which conveyors have speeds V1 and V2 respectively, the ratio of the speeds  $R = V1/V2$  being greater than or equal to 3, and preferably equal to 3.5, and also  
25 compression means (315) that reduce the product to its final thickness e, the H/e ratio being greater than or equal to 1.2, and preferably equal to 1.6, H corresponding to the height between the conveyors of the second pair (312, 313).

15. A method of construction using at least one architectural insulation element, of the roof, partition or wall-cladding panel type, characterized in that the

architectural insulation element is formed by assembling sandwich structures as claimed in any one of claims 1 to 12.

16. The method of construction as claimed in claim 15, characterized in that the sandwich structures are butted and joined together by interlocking of their ends (23, 24), which have mutually cooperating shapes.